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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,469	11/03/2001	David W. Buck	17810-510 NATL	3254

7590 04/07/2004  
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EXAMINER

HAYES, ROBERT CLINTON

ART UNIT PAPER NUMBER

1647

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/890,469

**Applicant(s)**

BUCK ET AL.

**Examiner**

Robert C. Hayes, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 21,23 and 27-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20,22 and 24-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-51 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10/11/02 .                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restriction*

1. Applicant's election of Group I (claims 1-20, 22 & 24-26) in Paper No. 1/16/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 21, 23 & 27-51 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected inventions. Election was made **without** traverse in Paper No. 1/16/04.

### *Priority*

2. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification of in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional *application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications* except when the reference is to a prior application of a CPA assigned the same application number.

### *Specification*

3. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### ***Information Disclosure Statement***

4. The information disclosure statements filed 10/11/02 fail to completely comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because listed references require authors and publication dates, copies, etc. It has been placed in the application file, but the information referred to therein has not been considered as to the merits, as it relates to the crossed out references. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

### ***Double Patenting***

5. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-2, 5, 7-10, 13, 16, 20 & 25 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-7, 9, 8, 12 & 13 of prior U.S. Patent No. 6,468,794 B1. This

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is a double patenting rejection. It is noted that no patentable weight is given to the redundant and indefinite claim language of "reagent" or "determinants" in the instant claims.

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 3, 4, 6, 11-12, 14-15, 17-19, 22, 24 & 26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,468,794 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the sole difference between these claims and those in '794 is the slightly broader scope of the claims in the instant application (e.g., claims 12, 14-15, 17-19, 22, 24 & 26), which includes re-iteration of redundant or indefinite claim language, such as "polyclonal antibody" (e.g., claims 3, 6 & 11), recitation of both AC133 and 5E12 monoclonal antibodies in the same claim (e.g., claim 4, versus each antibody separately), etc.

***Claim Objections***

7. Claims 3-4 & 6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In particular, claims 3 & 6 broaden their base claims to use additional antibodies, such as polyclonal antibodies, etc.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20, 22, 24-26 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method for producing a population of highly enriched human CNS stem cells using identifiable/deposited antibodies, does not reasonably provide enablement for methods of isolating highly enriched populations of human CNS stem cells using unknown or uncharacterized antibodies directed toward unknown “determinant[s] on the surface of the cells”. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The specification describes a method of producing a population of highly enriched human CNS stem cells using the deposited monoclonal antibody, AC133, from U.S. Patent 5,833,633. However, no other “reagents” have been described. Nor have any polyclonal antibodies been

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adequately described for use in the instant method (i.e., as it especially relates to claims 3-6). Additionally, the specification describes on pages 4-5 (i.e., as it also relates to the incorporation by reference of the Weiss patents) that only embryonic CNS brain regions and certain regions within the adult CNS (i.e., subventricular regions and dentate gyrus of the hippocampus) contain CNS neural stem cells, versus the invitation to discover other regions of the CNS that may, or may not, also contain neural stem cells, as encompassed by claims 12-14, etc.

The name "monoclonal antibody" or "polyclonal antibody", by itself, or "CD45/CD34 antigens", alone, sets forth no structural characterization and little functional characteristics for determining when the skilled artisan is in possession of the required products for knowing how to make and use the instant invention, and in contrast, encompasses use of any biologically functional equivalent antibody, or detection of any biologically functional equivalent epitope/antigen. However, the specification fails to teach what amino acids are critical for detecting any cellular "determinant" by uncharacterized AC133- or 5E12- or 8G1-related antibodies, except for possibly the epitopes recognized by deposited monoclonal antibody, AC133 from U.S. Patent 5,833,633, or what "reagent binds to CD45/CD34 antigens" (i.e., as it especially relates to claims 17-19). In other words, detection/recognition by structurally uncharacterized antibodies encompass random modifications or mutations or truncations of different "determinants on a cell surface", which would be expected by the skilled artisan to result in the use of antibodies that cross-react with different proteins, or in the use of antibodies that do not recognize the desired epitopes unique to neural stem cells. For example, Geysen et al. teach that random amino acid changes to a tetrameric peptide/epitope, which includes conservative substitutions to the same antigen, have "frequently been associated with loss of antibody binding" (e.g., pg. 38, 1st col.,

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2nd *pp*). Thus, the lack of guidance provided in the specification as to what minimal structural requirements are necessary for any “determinants on a cell surface”/ antibody binding reaction, except for that recognized by deposited monoclonal antibody, AC133 from U.S. patent 5,833,633, would prevent the skilled artisan from determining whether any random modification or truncation to random and structurally uncharacterized cellular “determinants” could be made that successfully results in the desired detection of “human CNS stem cells” of the instant invention, because any random mutation or modification or truncation manifested within a structurally uncharacterized cellular “determinant”, or “reagent”, would be predicted to adversely alter its biologically active 3-dimensional conformation, and therefore, the antigenic site itself; thereby, preventing the skilled artisan from knowing how to make and use the instant invention without undue experimentation to determine otherwise.

9. Claims 1-20, 22, 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is ambiguous and contradictory what constitutes a “reagent”, when the claims and specification alternatively appear to contemplate that it is the monoclonal antibody, AC133, etc., that is “the reagent” useful for isolating neural stem cells.

10. Claims 24 & 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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It is unknown what constitutes a "one or more predetermined growth factors effective...", or what the metes and bounds of a "neural survival factor (NSF)" entail, when none is recited within the claims.

11. Claims 17-20, 22 & 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, it is ambiguous and contradictory how one can "select... for reduced contact" based on "binding" to a CD45 or CD34 antigen, "such that those cells... are ... [then] CD45-" or "CD34-". In other words, if a "reagent" binds to CD45 or CD34 antigens, it cannot be "D45-" or "D34-" by definition. In addition, it is unclear what constitutes a "lo" phenotype, when the recitation of low is alternatively a relative term. Lastly, in that 5E12 and 8G1 appear to be antibody designations, versus well-known antigen designations, these claims are further indefinite.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Robert Hayes whose telephone number is (571) 272-0885. The examiner can normally be reached on Monday through Thursday, and alternate Fridays, from 8:30 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz, can be reached on (571) 272-0887. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

  
Robert C. Hayes, Ph.D.

April 5, 2004

  
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